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NESATRON® GLASS[1]

PROTOTYPE

PRODUCT DESCRIPTION

PPG NESATRON glass is a transparent, electrically conductive, metallic oxide coated glass with the coating applied to the glass substrate by a vacuum process. The coating is applied using relatively low temperatures; as a result, there is *no effect* on the *anneal* or *flatness* of the substrate. With clear glass substrates of 1/4-inch or less, resistivity as low as 10 ohms/square can be attained while maintaining visible light transmittance above 80%. The coating can be applied to any glass substrate including commercial plate, float, sheet and chemically or thermally tempered glasses.

USES

Antistatic coatings, infra-red reflectance, electromagnetic compatability, anti-ice and anti-fog panels, transparent conductors for electronic display applications.

PRODUCT AVAILABILITY

Substrate thickness: Unlimited.

Substrate size[2]: A convenient size at present is 24-inch x 24-inch. Larger size production capability is now being initiated. Annealed NESATRON glass can be cut and ground to specified shape and dimensions.

Curved parts[2]: NESATRON glass can be produced using curved substrates. Curvature tolerances will not be altered.

DURABILITY

NESATRON glass has a durable oxide coating with good weathering characteristics. For this reason it can meet more demanding requirements than evaporated metal coatings. NESATRON glass should be cleaned with soft, clean cloths, mild soap or detergent and clean rinse water. Abrasive cleaners should *not* be used.

THERMAL PROPERTIES

Surface emissivity: As low as 0.1 for a 10 ohms/square resistivity coating.

ELECTRICAL PROPERTIES

NESATRON glass is available in the resistivity range 10 ohms/square to 1,000 ohms/square. Throughout this resistivity range, visible light transmittance on clear glass substrates of 1/4-inch thickness or less can be maintained above 80%. Light transmittance for clear glass substrates greater than 1/4-inch generally is limited by the substrate itself and not the coating.

Bus bars on NESATRON glass provide for electrical contact in electric current flow applications. Tolerance on resistance between bus bars is ±5%.

The electrical resistance (for a given coating resistivity value) between bus bars of a 12-inch square and a 6-inch square will be the same. Because, as size square under consideration is increased, path length between bus bars along two opposite edges increases in the same ratio as edge length.

Resistance calculation: Calculate the total resistance of an 8-inch x 10-inch panel with continuous bus bars along the two 10-inch edges. Coating resistivity is 200 ohms/square.

$$\text{Total resistance} = \frac{200 \text{ ohms} \times 8}{10} = 160 \text{ ohms}$$

OPTICAL PROPERTIES

Refractive index of the coating measured at Sodium D line (N_d)	2.0

[1]Target performance criteria can be varied to some extent to meet application requirements.

[2]For specific details on your particular size or shape requirements contact PPG Project Manager. Refer to APPLICATION AND PRODUCT SERVICE, back page.

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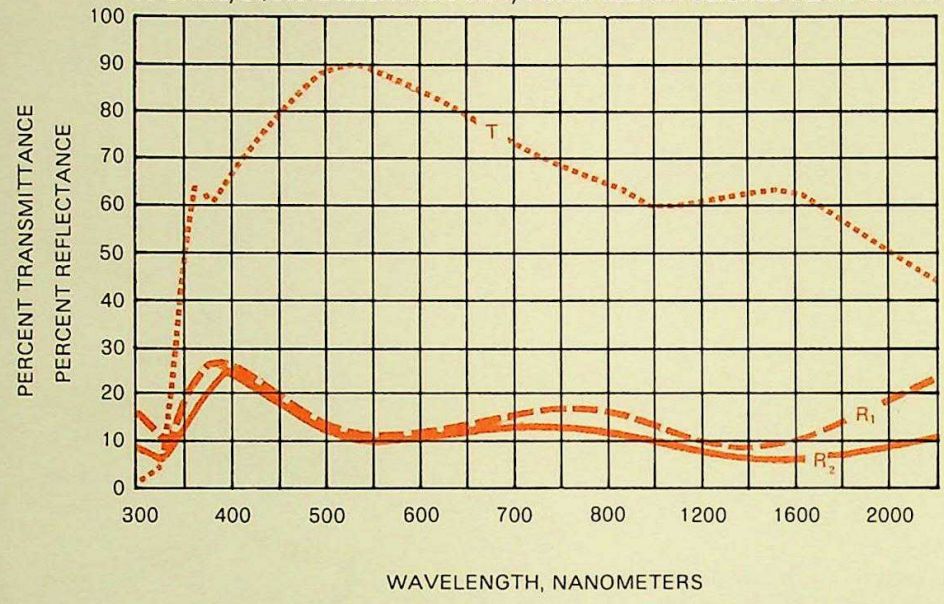
OPTICAL PROPERTIES

RADIANT ENERGY TRANSMITTANCE/REFLECTANCE[3]

50 OHMS/SQUARE NESATRON ON 1/4-INCH CLEAR POLISHED PLATE GLASS.

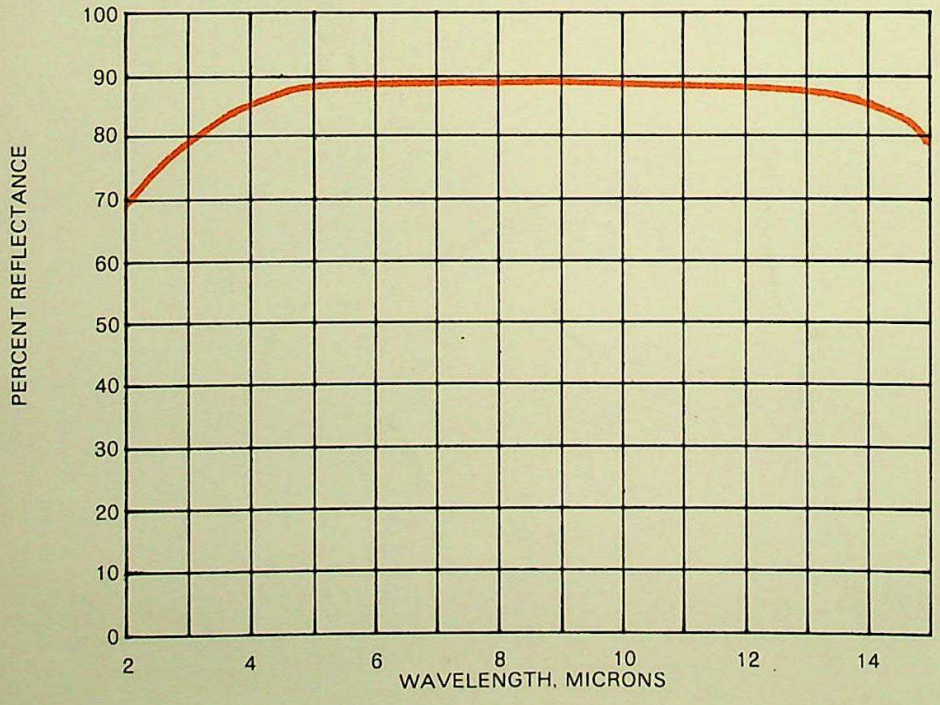


T = Transmittance
R_1 = Reflectance, energy incident on coated surface.
R_2 = Reflectance, energy incident on glass surface.

TRANSMITTANCE	Average
Total solar light	87%
Total solar energy (calculated)	71%
Total solar ultra-violet	52%
Total solar infra-red	60%

INFRA-RED REFLECTANCE[3]

10 OHMS/SQUARE NESATRON ON 1/8-INCH CLEAR POLISHED PLATE GLASS



[3] Transmittance and reflectance values based on spectrophotometric measurements and energy distribution of solar radiation.

APPLICATION AND PRODUCT SERVICE

Inquiries concerning applications in your field are invited. Write or telephone:

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